

What is Claimed is:

1. (Currently Amended) A method of reducing both the amount of carbon in fly ash and the amount of NO_x resulting from the combustion of coal, the method comprising

combining coal and an additive that comprises a manganese-containing compound forming a mixture thereof, wherein the manganese compound comprises at least 20 ppm of the coal; and

combusting said mixture in a combustion chamber; the manganese-containing compound being present in an amount effective to reduce both the amount of carbon in fly ash and the amount of NO_x resulting from the combusting of the coal in the combustion chamber.

2. (Original) The method as described in claim 1, wherein the manganese compound is an organometallic compound.

3. (Original) The method as described in claim 2, wherein the organo portion of the organometallic compound is derived from a material selected from the group consisting of alcohols, aldehydes, ketones, esters, anhydrides, sulfonates, phosphonates, napthenates, chelates, phenates, crown ethers, carboxylic acids, amides, acetyl acetonates and mixtures thereof.

4. (Original) The method described in claim 2, wherein the organometallic

compound comprises methylcyclopentadienyl manganese tricarbonyl.

5. (Previously Amended) The method described in claim 2, wherein the manganese compound is selected from the following group: cyclopentadienyl manganese tricarbonyl, methylcyclopentadienyl manganese tricarbonyl, dimethylcyclopentadienyl manganese tricarbonyl, trimethylcyclopentadienyl manganese tricarbonyl, tetramethylcyclopentadienyl manganese tricarbonyl, pentamethylcyclopentadienyl manganese tricarbonyl, ethylcyclopentadienyl manganese tricarbonyl, diethylcyclopentadienyl manganese tricarbonyl, propylcyclopentadienyl manganese tricarbonyl, isopropylcyclopentadienyl manganese tricarbonyl, tert-butylcyclopentadienyl manganese tricarbonyl, octylcyclopentadienyl manganese tricarbonyl, dodecylcyclopentadienyl manganese tricarbonyl, ethylmethylcyclopentadienyl manganese tricarbonyl, indenyl manganese tricarbonyl, including mixtures of two or more such compounds.

6. (Original) The method as described in claim 1, wherein the manganese-containing compound is selected from the group consisting of manganese oxides, manganese sulfates, and manganese phosphates.

7. (Original) The method as described in claim 1, wherein the manganese compound comprises about 20 ppm of the coal.

8. (Currently Amended) The method as described in claim 1, wherein the

manganese compound comprises ~~about 5~~ 20 to 100 ppm of the coal.

9. (Currently Amended) The method as described in claim 1, wherein the manganese compound comprises ~~about 1~~ 20 to 500 ppm of the coal.

10. (Original) The method as described in claim 1, wherein the additive is introduced into an air stream that carries the coal into the combustion chamber.

11. (Currently Amended) A method of reducing both the amount of carbon in fly ash and the amount of NOx resulting from the combustion of coal, the method comprising:

combining coal and an additive that comprises a manganese-containing compound to form a mixture thereof wherein the additive is introduced directly into the combustion chamber separately from the coal at a rate of at least 20 ppm of manganese-containing compound compared with the coal; and

combusting said mixture in a combustion chamber;
the manganese-containing compound being present in an amount effective to reduce both the amount of carbon in fly ash and the amount of NOx resulting from the combusting of the coal in the combustion chamber.

12. (Original) The method as described in claim 11, wherein the additive is introduced into a flue gas recirculation stream.

13. (Original) The method as described in claim 11, wherein the additive is introduced into a secondary air stream that is delivered into the combustion chamber.

14. (Currently Amended) A method of reducing both the amount of carbon in fly ash and the amount of NOx resulting from the combustion of coal, the method comprising:

combining coal and an additive that comprises a manganese compound to form a mixture thereof, wherein the manganese compound comprises at least 20 ppm of the coal;

introducing the mixture of coal and additive into a coal burning combustion chamber;

combusting the mixture in the combustion chamber; and
the manganese compound being present in an amount effective to reduce both the amount of carbon in fly ash and the amount of NOx resulting from the combustion of the coal in the combustion chamber.

15. (Currently Amended) A coal additive for use in reducing both the amount of carbon in the fly ash and the amount of NOx resulting from the combustion of coal, the additive comprising a manganese compound wherein the manganese compound is added to the coal prior to combustion at a treat rate of ~~about 1~~ 20 to 500 ppm of the coal.

16. (Currently Amended) The coal additive as described in claim 14, wherein the manganese compound is added to the coal prior to combustion at a treat rate of ~~about 5~~ 20 to 100 ppm of the coal.

17. (Original) The coal additive as described in claim 14, wherein the manganese compound is added to the coal prior to combustion at a treat rate of about 20 ppm of the coal.

18. (Currently Amended) A method reducing simultaneously the amount of carbon in fly ash, the amount of NOx, and the amount of carbon monoxide resulting from the combustion of coal, the method comprising combining coal and an additive that comprises a manganese-containing compound forming a mixture thereof, wherein the manganese-containing compound comprises at least 20 ppm of the coal; and combusting said mixture in a combustion chamber; the manganese-containing compound being present in an amount effect to reduce the amount of carbon in fly ash, the amount of NOx, and the amount of carbon monoxide resulting from the combustion of the coal in the combustion chamber.

19. (Currently Amended) A method reducing both the amount of carbon monoxide and the amount of NOx resulting from the combustion of coal, the method comprising:

combining coal and additive that comprises a manganese-containing compound forming a mixture thereof, wherein the manganese-containing compound comprises at least 20 ppm of the coal; and

combustion said mixture in a combustion chamber;
the manganese-containing compound being present in an amount effective to reduce both the amount of carbon monoxide and the amount of NOx resulting from combusting of the coal in the combustion chamber.

20. (Currently Amended) A method of reducing both the amount of carbon in fly ash and the amount of NOx resulting from the combustion of coal, the method comprising combusting coal in the presence of at least \pm 20 ppm of a manganese-containing additive, whereby the amount of carbon in fly ash and the amount of NOx resulting from the combustion of said coal are both reduced relative to the amounts of carbon in fly ash and NOx resulting from the combustion of coal in the absence of the manganese-containing additive.

21. (Currently Amended) A method for stabilizing coal combustion by combusting coal in the presence of at least \pm 20 ppm of a manganese-containing additive, whereby the amount of carbon in fly ash and the amount of NOx resulting from the combustion of said coal are both reduced relative to the amounts of carbon in fly ash and NOx resulting from the combustion of coal in the absence of the manganese-containing additive, and whereby combustion stability is improved relative to the combustion stability of the coal in the absence of the manganese-containing additive.